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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/618,307

07/18/2000

Clements C. Lambeth

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09/19/2006

CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC  
1420 FIFTH AVENUE  
SUITE 2800  
SEATTLE, WA 98101-2347

EXAMINER

FOX, DAVID T

ART UNIT

PAPER NUMBER

1638

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/618,307	<b>Applicant(s)</b> LAMBETH ET AL.	
	<b>Examiner</b> David T. Fox	<b>Art Unit</b> 1638	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 20-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>28 March 2006</u> . | 6) <input type="checkbox"/> Other: _____  |

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07 August 2006 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20, 24 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Hormaza (1999, Applicant submitted).

The claims are drawn to a method of tree breeding comprising pollinating female flowers with a mixture of pollen, evaluating the progeny for phenotype, wherein said progeny are to be used in subsequent generations of breeding, and determining the pedigree of the progeny using DNA analysis, wherein the pedigree includes determining paternity and the DNA analysis includes RAPDs.

Hormaza teaches a method of cherry breeding comprising pollinating female flowers with a mixture of pollen from three parents, determining the phenotype of the progeny using molecular markers, determining the paternity of the progeny using

RAPDs, and incorporating the selected progeny into a breeding program (see, e.g., pages 121-123 and pages 125-126).

Claims 20-31 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Bridgwater in view of El-Kassaby et al, further in view of Stoehr et al (1998, Can. J. For. Res. 28: 187-195), as stated on pages 20-22 of the Examiner's Answer mailed 17 May 2005.

Claims 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridgwater in view of Hormaza (1999, Applicant submitted).

The claims are drawn to a method of tree breeding comprising pollination of female reproductive structures with a mixture of pollen, scoring progeny trees for phenotype including disease resistance and general combining ability, determining the paternity and/or maternity of the progeny via DNA analysis, and using the pedigree and phenotype score to select a plurality of tree progeny for inclusion in a breeding group for breeding to produce further generations exhibiting genetic gain.

The teachings of Bridgwater have been summarized on pages 20-21 of the Examiner's Answer of 17 May 2005. Bridgwater also discusses tree breeding for genetic gain (see, e.g., page 70, bottom paragraph; page 72, penultimate paragraph).

Bridgwater does not teach using DNA analysis to determine pedigree.

Hormaza teach the advantages of RAPD analysis in pedigree determination in a cherry tree breeding program, as discussed above.

It would have been obvious to one of ordinary skill in the art to utilize the method of polymix tree breeding and pedigree determination as taught by Bridgwater, and to

modify that method by utilizing the DNA analysis of pedigree taught by Hormaza, given the success of Hormaza and the suggestion of the broad applicability of the method (see, e.g., Hormaza, page 121, Abstract; page 126, top paragraph).

No claim is allowed.

Applicant's arguments filed 07 August 2006 have been fully considered but they are not persuasive. Applicant urges that the obviousness rejection of record is improper, given the unexpected benefits of the claimed process as illustrated by the simulation of Purvis et al, and the long-felt need for the claimed process as evidenced by publications and communications appended to the amendment of 07 August 2006.

The Examiner maintains that the mathematical simulation of Purvis et al is not probative, since no actual results were obtained. See Shelbourne (1969, Applicant submitted, page 33) who teaches that "numerical comparisons of predicted gains are of limited value", and are superceded by "the practical realities and problems of a particular situation". Moreover, as stated on pages 23-24 of the Answer of 17 May 2005, Applicant did not reduce to practice steps c and e of claim 20. Thus, no actual results, unexpected or otherwise, were presented for evaluation.

Regarding the remaining references appended to the amendment of 07 August 2006, the Examiner maintains that those references highlight the potential pitfalls of Applicant's claimed method, rather than demonstrating that it fulfills a long-felt need. Burdon et al (2004 IUFRO Forest Genetics Meeting Proceedings) teach that a successful tree breeding method should avoid inbreeding and loss of reproductive capacity; and that molecular markers necessary for pedigree reconstruction are not yet

available in the majority of cases (see, e.g., page 79, second paragraph; page 80, top two paragraphs).

De Castro et al (2004 Poster) teach that equality of pollen fitness is a necessary requirement for Applicant's claimed method of polymix breeding, in order to ensure that pollen from genetically superior parents are able to equally contribute their genes to the progeny population (see, e.g., Abstract). However, de Castro et al teach that at least in eucalyptus, reproductive fitness of pollen of various genotypes was grossly unequal, calling into question the utility of Applicant's procedure (see, e.g., Abstract and Conclusions).

Similarly, Wheeler et al (2006) teach the grossly unequal reproductive fitness of various pollen parents involved in a polymix (see, e.g., page 53, Abstract; page 59, Summary). Grattapaglia et al (2004) provide more evidence of unequal reproductive fitness in Eucalyptus, and also teach that Applicant admitted that insufficient markers existed to accurately determine pedigree in their breeding population (see, e.g., page 192, Abstract; page 195, Table 4 and bottom paragraph of column 1; page 197, column 1; page 198, second full paragraph).

Finally, it is noted that even if unexpected (or any) results were submitted, that the single pine species and single marker type exemplified in the specification is not commensurate with the claim scope. See page 24 of the Answer of 17 May 2005.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David T. Fox whose telephone number is 571-272-0795.

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The examiner can normally be reached on Monday through Friday from 10:30AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg, can be reached on 571-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 14, 2006

DAVID T. FOX  
PRIMARY EXAMINER  
GROUP 180 1638

A handwritten signature in black ink, appearing to read 'D. Fox', written in a cursive style.